# Mission Function Critical Competencies

Mission function critical competencies provide a basis for understanding and completing the work of an organization. The first example is a draft list of engineering competencies developed within NNSA; the second example starting on page 4 provides information on Human Resource Management competencies; and the third example starting on page 6 covers general and technical competencies for scientists.

Example 1 -

National Nuclear Security Administration Mission Functional Critical Competencies
Engineering Series

| | **COMPETENCY NAME** | **COMPETENCY DEFINITION** |
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| 1 | Nuclear Fundamentals | Knowledge of one or more of the following: basic nuclear theory and principles; basic fission process and results obtained from fission; radiological controls and theory; contamination control and theory; basic radiation detection methods and principles; and requirements documents for radiological control practices, procedures, and limits. |
| 2 | Environmental Management | Knowledge in one or more of the following: sources and types of radioactive and hazardous waste associated with DOE facilities; directives, regulations and processes related to environmental protection, restoration, and waste management. |
| 3 | Safety Management | Knowledge in one or more of the following: the Department's philosophy and approach to implementing Integrated Safety Management; Occupational Safety and Health Act (OSHA); Nuclear and non-Nuclear Facility Safety Basis; Nuclear Explosive Safety; other safety documentation; and applicable directives and regulations. |
| 4 | Conduct of Operations | Knowledge with one or more of the following: principles of Conduct of Operations and ability to relate these principles to an operational environment; and applicable directives and regulations. |
| 5 | Quality Assurance | Knowledge of quality assurance standards and directives (including facility quality, software quality, weapon quality, etc.). |
| 6 | Program Management | Ability to manage assigned programs. Display adherence to program management principles, methods, and practices including developing plans and schedules, estimating resource requirements, defining milestones and deliverables, monitoring activities, and evaluating and reporting on accomplishments. This will include the need to communicate complex technical requirements to non-technical personnel, and prepare and present briefings to senior management officials on complex/controversial issues. |

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| 7 | Project Management | Ability to manage assigned projects. Display adherence to project management principles, methods, and practices including developing plans and schedules, estimating resource requirements, defining milestones and deliverables, monitoring activities, and evaluating and reporting on accomplishments. This will include the need to communicate complex technical requirements to non-technical personnel, and prepare and present briefings to senior management officials on complex/controversial issues. |
| 8 | Real Property Management | Knowledge of the disciplines required to effectively manage and oversee real property asset management functions including planning, acquisition, operations, maintenance and repair, recapitalization, disposition and real estate management. |
| 9 | Nuclear Weapons | Familiarity with Nuclear Weapons design, development, testing, evaluation, deployment, transportation and dismantlement. |
| 10 | Nuclear Nonproliferation Policies and Programs | Knowledge of nuclear fuel cycle technologies, material and processes. Knowledge of export control and other relevant national and international policies and procedures, especially IAEA safeguards, agreements for cooperation, and inspection technologies and methodologies. |
| 11 | Oversight and Assessment | Knowledge of audit, oversight, and assessment principles and practices, including assessing performance against applicable standards and requirements, issuing audit/assessment reports, and evaluating corrective and preventive action effectiveness including root cause analysis. Ability to represent DOE as subject matter expert during the oversight and management of engineering programs; the ability to independently conduct peer review and verify and assess field activities; contract provisions necessary to provide oversight and assessments of a contractor's performance. |
| 12 | Emergency Management and Response | Knowledge of emergency management, continuity of operations planning, disaster recovery planning, Accident Response Group, Joint Technical Operations Team, Radiological Assistance Program, Nuclear Emergency Search Team, and other inter-agency and international programs and capabilities relevant to the NNSA mission. |
| 13 | Industry and Consensus Codes and Standards | Knowledge of industry and consensus codes, standards, and provisions related to the specific engineering discipline or functional area qualification related to the position. This includes related DOE and/or NNSA directives and regulations as applicable. |
| 14 | Safeguards and security | Knowledge of purpose, scope, and key elements of DOE/NNSA safeguards and security program. Knowledge of the purpose, scope and key elements of joint security activities with the Department of Defense. Ability to execute assigned responsibilities for the protection of information, property, and |

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| 15 | Government Financial Processes | Knowledge of the organization's financial processes sufficient to prepare, justify, and administer the budget; oversee procurement and contracting to achieve desired results; monitor expenditures and use cost-benefit and other analytical methodologies to set priorities. |
| 16 | Contract management | Knowledge of M&O and other contracting principles and processes to participate in requirements definition, acquisition strategy development, source selection, contractor evaluation, and other performance evaluation activities. |

Example 2 -
U.S. Office of Personnel Management Human Resource Management (HR) Occupational Competencies

Leading Change – HR General Occupational Competencies

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| *HRG6-Client Engagement/ Change Management* | *Knowledge of the impact of change on people, processes, procedures, leadership, and organizational culture; knowledge of change management principles, strategies, and techniques required for effectively planning, implementing, and evaluating change in the organization.* |

Building Coalitions - Political Savvy – HR General Occupational Competencies

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| *HRG7-Knowledge of the Agency's Business* | *Knows the organizations mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization.* |

HR General Technical Occupational Competencies

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| HRT1-Classification | Knowledge of classification concepts, principles, and practices related to structuring organizations and positions and determining the appropriate pay system, occupational grouping, title, and pay level of positions. |
| HRT2-Compensation | Knowledge of compensation concepts, principles, and practices, including pay and leave administration and compensation flexibilities. |
| HRT3-Employee Benefits | Knowledge of HR concepts, principles, and practices related to retirement, insurance, injury compensation, and other employee benefits programs. |
| HRT4-Employee Development | Knowledge of employee development concepts, principles, and practices related to planning, evaluating and administering training, organizational development, and career development initiatives. |

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| HRT5-Employee Relations | Knowledge of laws, rules, regulations, case law, principles, and practices related to employee conduct, performance, and dispute resolution. |
| HRT6-HR Information Systems | Knowledge of HR management concepts, principles, and practices related to identifying and analyzing HR processes, translating functional requirements into technical requirements, and delivering and maintaining HR information systems. |
| HRT7-Labor Relations | Knowledge of laws, rules, regulations, case law, principles, and practices related to negotiating and administering labor agreements. |
| *HRT8-Political Savvy - Legal, Government and Jurisprudence* | *Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process.* |
| HRT9-Recruitment/Placement | Knowledge of HR concepts, principles, and practices related to identifying, attracting, and selecting individuals and placing them into positions to address changing organizational needs. |
| HRT10-Technical Competence – Continual Learning | Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform ones job; works with, understands and evaluates technical information related to the job; advises others on technical issues. |
| HRT11-Workforce Planning | Knowledge of HR concepts, principles, and practices related to determining workload projections and current and future competency gaps to align human capital with organizational goals. |
| HRT12-Performance Management | Knowledge of performance management concepts, principles, and practices related to planning, monitoring, rating, and rewarding employee performance. (See Performance Management – Leadership) |
| HRT13-Performance Management Communication and Training | Communicates and trains workforce for effective utilization of performance management system and practices. |
| HRT14-Performance Management Evaluation | Evaluates and adjusts performance management system and practices to align with organizational strategic needs and goals. |

Example 3 -
OPM Science and Engineering Competencies - Occupational Study 2000 – 2002

General Competencies

| Title | Description |
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| Reading | Understands and interprets written material, including technical material, rules, regulations, instructions, reports, charts, graphs, or tables; applies what is learned from written material to specific situations. |
| Writing | Recognizes or uses correct English grammar, punctuation, and spelling; communicates information (for example, facts, ideas, or messages) in a succinct and organized manner; produces written information, which may include technical material, that is appropriate for the intended audience. |
| Mathematical Reasoning | Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques. |
| Oral Communication | Expresses information (for example, ideas or facts) to individuals or groups effectively, taking into account the audience and nature of the information (for example, technical, sensitive, controversial); makes clear and convincing oral presentations; listens to others, attends to nonverbal cues, and responds appropriately. |
| Creative Thinking | Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable. |
| Information Management | Identifies a need for and knows where or how to gather information, organizes and maintains information or information management systems. |
| Decision Making | Makes sound, well-informed, and objective decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change, accomplish goals; monitors progress and evaluates outcomes. |
| Reasoning | Identifies rules, principles, or relationships that explain facts, data, or other information; analyzes information and makes correct inferences or draws accurate conclusions. |

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| Problem Solving | Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives, and to make recommendations. |
| Mental Visualization | Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan). |
| Learning | Uses efficient learning techniques to acquire and apply new knowledge and skills; uses training, feedback, or other opportunities for self-learning and development. |
| Self-Esteem | Believes in own self-worth; maintains a positive view of self and displays a professional image. |
| Teamwork | Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals. |
| Integrity/Honesty | Contributes to maintaining the integrity of the organization; displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; is trustworthy. |
| Self-Management | Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner; works with minimal supervision; is motivated to achieve; demonstrates responsible behavior and determines |
| Interpersonal Skills | Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; develops and maintains effective relationships with others; may include effectively dealing with individuals who are difficult, hostile, or distressed; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, disabilities, and other individual differences. |
| Planning and Evaluating | Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization |
| Attention to Detail | Is thorough when performing work and conscientious about attending to detail. |

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| Financial Management | Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization. |
| Managing Human Resources | Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner. |
| Leadership | Influences, motivates, and challenges others; adapts leadership styles to a variety of situations. |
| Strategic Thinking | Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy; examines policy issues and strategic planning with a long term perspective; determines objectives and sets priorities; anticipates potential threats or opportunities. |
| Teaching Others | Helps others learn through formal and informal methods; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor. |
| Customer Service | Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services. |
| Organizational Awareness | Knows the organization’s mission and functions, and how its social, political, and technological systems work and operate effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization. |
| External Awareness | Identifies and understands economic, political, and social trends that affect the organization. |
| Vision | Understands where the organization is headed and how to make a contribution; takes a long-term view and recognizes opportunities to help the organization |

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| | accomplish its objectives or move toward the vision. |
| Influencing/Negotiating | Persuades others to accept recommendations, cooperate, or change their behavior; works with others towards an agreement; negotiates to find mutually acceptable solutions. |
| Conflict Management | Manages and resolves conflicts, grievances, confrontations, or disagreements in a constructive manner to minimize negative personal impact. |
| Stress Tolerance | Deals calmly and effectively with high stress situations (for example, tight deadlines, hostile individuals, emergency situations, dangerous situations). |
| Flexibility | Is open to change and new information; adapts behavior or work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with ambiguity. |
| Technology Application | Uses machines, tools, instruments, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format. |
| Technical Competence | Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical information related to the job; advises others on technical issues. |
| Administration and Management | Knowledge of planning, coordination, and execution of business functions, resource allocation, and production. |
| Project Management | Applies principles, methods, or tools for developing, scheduling, coordinating, monitoring, evaluating, and managing projects and resources, including technical performance. |
| Contracting/Procurement | Knowledge of various types of contracts, techniques or requirements (for example, Federal Acquisitions Regulations) for contracting or procurement, and contract negotiation and administration. |
| Memory | Recalls information that has been presented previously. |
| Perceptual Speed | Quickly and accurately sees detail in words, numbers, pictures, and graphs. |
| Agility | Bends, stretches, twists, or reaches out with the body, arms, or legs. |
| Stamina | Exerts oneself physically over long periods of time without tiring (which may include performing repetitive tasks such as data entry or coding). |

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| Physical Strength | Exerts maximum muscle force to lift, push, pull, or carry objects; performs moderately laboring work. |
| Eye-Hand Coordination | Accurately coordinates one's eyes with one's fingers, wrists, or arms to perform job-related tasks (for example, to move, carry, or manipulate objects). |
| Spatial Orientation | Knows one’s location in relation to the environment; determines where other objects are in relation to one’s self (for example, when using a map). |
| Visual Identification | Accurately identifies people, animals, or objects based on knowledge of their characteristics. |
| Peripheral Vision | Sees objects or movement of objects to one’s side when the eyes are focused forward. |
| Depth Perception | Accurately judges which of several objects is closer or farther away from the observer, or the distance between an object and the observer. |
| Visual Color Discrimination | Accurately matches or detects differences between colors, including shades of color and brightness. |

Technical Competencies

| Title | Description |
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| Accounting | Knowledge of traditional accounting practices including accrual, obligations, and costs methods. |
| Aerospace Engineering | Knowledge of the concepts, principles, and theories of aerodynamics or space environments related to the design, development, testing, analysis, application, and utilization of aerospace and aeronautical devices, vehicles, systems, and equipment. |
| Architecture | Knowledge of the concepts, principles, theories, and practices used in the planning, design, construction, and maintenance of buildings or other structures, taking into consideration aesthetic and functional concerns. |
| Astronomy | Knowledge of the concepts, principles, and theories of the physical processes leading to the emission of electromagnetic radiation or particles from celestial bodies, the measurement and physical characteristics of celestial bodies, including cosmic microwave background, sub-millimeter technology, galaxies, star formations, and planetary science. |
| Biology | Knowledge of plant and animal living tissue, cells, organisms, and entities, including their functions, interdependencies, and interactions with each other. |
| Botany | Knowledge of the concepts, principles, and theories of |

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| | plants, including structures and functions, classification, taxonomy, plant communities, distribution, habitat requirements, life histories, reproduction, conservation, and care of plant species. |
| Building and Construction | Knowledge of the materials, methods, systems, and the tools used to construct objects, structures, and buildings. |
| Cartography | Knowledge of the concepts, principles, theories, and methods related to the research, design, development, or revision of maps, charts, and related cartographic products, and photogrammatic and cartographic processing. |
| Chemical Engineering | Knowledge of the concepts, principles, and theories related to the chemical composition or physical characteristics of materials for the design, construction, operation, and improvement of processes or systems. |
| Chemistry | Knowledge of the concepts, principles, and theories of the composition, structure, and properties of substances, and of the chemical processes and transformations, including uses of chemicals and their interactions, danger signs, production techniques, and disposal methods. |
| Civil Engineering | Knowledge of the concepts, principles, theories, and methods required to plan, design, construct, operate, and maintain facilities such as buildings, transportation systems, water and sanitary systems, and other public works systems. |
| Computers and Electronics | Knowledge of the design and operation of electric circuit boards, processors, chips, and computer hardware or software systems, including applications and programming. |
| Cost-Benefit Analysis | Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying tangible and intangible benefits. |
| Data Systems | Knowledge of computer hardware and software development and systems as they apply to the conception, specification, analysis, planning, development, installation, test, modification and use of data handling and computing systems in support of aerospace flight and ground systems. |
| Design | Knowledge of conceptualizing, developing, producing, understanding, and using plans, models, blueprints, and maps, including the use of tools and instruments to produce precision technical drawings, working prototypes, components, or systems. |

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| Earth Science | Knowledge of interdisciplinary disciplines associated with the earth's composition, structure, or other physical aspects, including atmosphere. |
| Ecology | Knowledge of the concepts, principles, and theories of the interrelationships among organisms and their environment, including competition and predation, evolution and natural selection, population dynamics, and the impact of natural phenomena or human actions on natural systems, processes, and biota. |
| Economics | Knowledge of economic policy, principles, and practices, market and non-market values, and the analysis and reporting of economic data. |
| Education and Training | Knowledge of the concepts, principles, and theories of instructional methods such as teaching, training, research, making presentations, lecturing, and testing. |
| Electrical Engineering | Knowledge of the concepts, principles, theories, and methods related to the design, analysis, test, and integration of electrical systems; energy conversion; electrical power generation; and energy transmission, control, distribution or use. |
| Electronics Engineering | Knowledge of the concepts, principles, theories, and methods related to the design, analysis, test, fabrication, or verification of analog or digital electronic systems. |
| Entomology | Knowledge of the concepts, principles, and theories of insects, including taxonomy, morphology, behavior, life cycles, population dynamics, host-insect interactions, the role of insects in natural and managed ecosystems, and the regulation, prevention, and control of pest-related problems. |
| Environmental Engineering | Knowledge of the concepts, principles, theories, and methods to protect and improve the quality of the environment and its resources; and to monitor, control, abate, and prevent pollutants. |
| Facilities | Knowledge of the physical, engineering, and experimental equipment and operational characteristics of facilities, and safety and equipment development designed to support aerospace activities. |
| Fire Management | Knowledge of the concepts, principles, and theories of fire management, including the characteristics, behavior, and ecology of fire; methodologies, strategies, and equipment used in prescribed fires; fire detection, prevention, and suppression strategies; and integration of fire with natural resource management. |

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| Fishery Biology | Knowledge of the concepts, principles, and theories of aquatic life, including classification, taxonomy, population dynamics, distribution, habitat requirements, life histories, reproduction, behaviors, conservation, and care of aquatic species. |
| Flight Systems | Knowledge of the concepts, principles, and theories related to the development, design, test, and evaluation of aerospace flight vehicles and their component subsystems, or their related external systems. |
| Fluid Dynamics and Mechanics | Knowledge of the concepts, principles, and theories of computational fluid dynamics, fluid mechanics, flight dynamics, flight structures, the force and motion mechanics of vehicles in various atmospheric and celestial environments, aerothermodynamics, and the characteristics of electrically conducting fluids under the action of magnetic and electric fields. |
| Forensics | Knowledge of procedures of civil, criminal, or administrative hearings, evidence collection, including the delivery and receipt of evidence, classes of evidence, and rules of evidence and legal procedures. |
| Forest Management | Knowledge of the concepts, principles, and theories of silviculture and forest ecology, forest use, management, harvesting, conducting inventories, regeneration, sustainability, and conservation; and the role of disturbances in timberland resources. |
| General Engineering | Knowledge of the concepts, principles, and theories of engineering and their practical applications. |
| Genetics | Knowledge of the concepts, principles, and theories of genetics, including the biochemistry of DNA, gene interaction, gene expression, gene inheritance, population genetics, adaptation, and evolution. |
| Geography | Knowledge of the concepts, principles, theories, and methods for describing the location and distribution of land, sea, and air masses, including their physical locations, relationships, characteristics, and what the land supports. |
| Geology | Knowledge of the concepts, principles, and theories of the origins and structure of the earth, including the physical forces that have shaped it and its physical and organic history. |
| Geophysics | Knowledge of the concepts, principles, and theories related to solid earth structure, global seismic patterns, lithosphere, atmosphere, and the behavior of the earth’s |

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| | gravitational, magnetic, and electrical fields, and other forces affecting the earth and its environment. |
| Geotechnical Engineering | Knowledge of the concepts, principles, theories, and methods related to the investigation and evaluation of subsurface soil or geologic conditions and properties for the purpose of designing stable foundation systems, earthen structures, or the remediation of subsurface conditions. |
| Health Physics | Knowledge of the concepts, principles, theories, and methods pertaining to the protection of people, their environment, and equipment from hazards (for example, radiation or hazardous chemicals) and the control of radioactive material. |
| Horticulture | Knowledge of the concepts, principles, theories, and practices of cultivation or crop management, physiological processes in plant growth and crop yield. |
| Hydraulic Engineering | Knowledge of the concepts, principles, theories, and methods applicable to analysis of the flow of fluids (open channel and pressure flow), estimation of river stages, and design of hydraulic structures, drainage structures, pipes, navigation facilities, reservoirs, locks, and dams. |
| Hydrology | Knowledge of the concepts, principles, theories, and methods related to the magnitude, distribution, and quality of water resources including watershed management, climatology, geomorphology, groundwater hydrology, water quality, water resource management, and groundwater/surface water interactions. |
| Landscape Architecture | Knowledge of the concepts, theories, and practices used in the planning, designing, construction, and adaptation of outdoor features, taking into consideration recreation planning, requirements, aesthetic value, and compatibility with other developments and resources. |
| Legal, Government and Jurisprudence | Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process. |
| Life Sciences and Systems | Knowledge of life sciences that involve the theoretical and experimental research of life systems. |
| Manufacturing | Knowledge of the specifications, tools, inputs, raw materials, outputs, and waste related to the manufacture of prototypes, models, systems, or other products. |
| Materials Engineering | Knowledge of the concepts, principles, theories, and |

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| | methods related to the composition, structures, and properties of materials, their use, behavior and performance under environmental influences, and the identification, processing, and manufacture of optimal materials for various applications. |
| Measurement and Instrumentation | Knowledge of electronics and related electrical engineering disciplines necessary for the research and development of sensors, electronic measurement devices, and instrumentation systems for aerospace systems and components. |
| Mechanical Engineering | Knowledge of the concepts, principles, theories, and methods related to planning, designing, developing, testing, or evaluating thermodynamic, mechanical, electro-mechanical, pneumatic, hydraulic, or structural equipment, systems, models, tools, or specialized mechanical devices. |
| Mechanics | Knowledge of machines and tools, including their design, use, benefits, repair, operation, and maintenance. |
| Metallurgy | Knowledge of the concepts, principles, and theories related to the study of extracting, refining, alloying, and preparing metals for use; and their properties and behavior as affected by the composition, treatment in manufacture, and conditions of use. |
| Mining Engineering | Knowledge of the concepts, principles, theories, and methods related to rock mechanics; the exploration, excavation, extraction, processing and transporting of mineral resources; and the conservation and development of mineral lands, materials, and deposits. |
| Modeling and Simulation | Knowledge of the tools and techniques used to develop functional, physical, or prototype models and simulations for test and evaluation programs, the prediction of behavior and phenomena, and to visually communicate concepts. |
| Nuclear Engineering | Knowledge of the concepts, principles, theories, and application of nuclear technologies including research, development, construction, operation, testing, and maintenance of nuclear reactors, radiation generating devices, and associated systems and equipment. |
| Nuclear Physics | Knowledge of the concepts, principles, theories, and methods related to the prediction of nuclear interactions and reactions, including practices and methods used to produce, measure, use, or observe such reactions in stars, nuclear weapons systems, and radiation shielding. |

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| Operations | Knowledge of engineering or physical science disciplines to support space flight operations, training or planning; serving as an astronaut or mission specialist. |
| Pathology | Knowledge of the concepts, principles, and theories of plant, insect, or animal diseases and host/pathogen relationships, including effects on natural and managed ecosystems. |
| Petroleum Engineering | Knowledge of the concepts, principles, theories, and methods related to the exploration, development, extraction, recovery, processing, and conservation of fluid minerals, geothermal resources, organic compounds, or natural gas resources. |
| Physics | Knowledge of the concepts, principles, theories, and methods to investigate and apply the relations between space, time, matter, and energy in the areas of gravity, atomic principles, mechanics, heat, light, sound, electricity, magnetism, and related natural phenomena. |
| Propulsion and Power | Knowledge of the concepts, principles, and theories of liquid, solid, electrical, chemical, electrochemical, or nuclear propulsion and power generation systems, their component parts and subsystems, and the direct and indirect conversion of energy into power for various applications. |
| Psychology | Knowledge of the concepts, principles, and theories of human behavior and performance in various contexts, mental processes, or the assessment and treatment of behavioral and affective disorders. |
| Public Planning | Knowledge of functions, principles, methods, and techniques of public planning, including those related to community planning, outdoor recreation planning, and natural resource management, such as demand forecasting, environmental impact analysis, financial forecasting, and land use planning and zoning. |
| Public Safety and Security | Knowledge of intelligence operations; public safety and security operations; occupational health and safety; investigation and inspection techniques; or rules, regulations, precautions, and prevention techniques for the protection of people, data, and property. |
| Quality Management | Knowledge of the principles, methods, and tools of quality assurance, quality control, and reliability used to ensure that a project, system, or product fulfills requirements and standards. |
| Rangeland Management | Knowledge of the concepts, principles, and theories of |

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| | non-forested or forested land ecosystems, including rangeland use, management, and monitoring; conducting inventories; and the role of disturbances in rangeland ecosystems. |
| Remote Sensing | Knowledge of the concepts, principles, theories, and methods necessary to obtain, use, and interpret data from remote sensing sources, including aircrafts and satellites. |
| Research | Knowledge of the scientific principles, methods, and processes used to conduct a systematic and objective inquiry; including study design, collection, analysis, and interpretation of data; and the reporting of results. |
| Risk Management | Knowledge of the principles, methods, and tools used for risk assessment and mitigation, including assessment of failures and their consequences. |
| Safety Engineering | Knowledge of the concepts, principles, theories, and methods to identify, control, mitigate, and eliminate safety hazards in the design and use of facilities, equipment, operations, and work processes. |
| Sociology and Anthropology | Knowledge of the concepts, principles, and theories of group behavior and dynamics; societal trends and influences; and cultures, their history, migrations, ethnicity, and origins. |
| Soil Science | Knowledge of the concepts, principles, or theories of soil composition, formation, classification, mapping, testing, and management, including erosion, pollution, conservation, and watershed management. |
| Space Science | Knowledge of physical science and engineering necessary to conduct research or study the solar system and beyond. |
| Structural Engineering | Knowledge of the concepts, principles, theories, and methods related to the design and analysis of complex structures using a variety of materials. Structures may include aerospace systems or structures, and other determinate or indeterminate systems. |
| Surveying | Knowledge of the concepts, principles, theories, and methods used in the measurement or determination of land boundaries, distances, elevations, areas, angles, and other features of the earth’s surface. |
| Telecommunications | Knowledge of the concepts, principles, and theories of transmissions, broadcasting, switching, control, construction, or operation of telecommunications systems. |

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| Transportation Engineering | Knowledge of the concepts, principles, theories, and methods applicable to planning, designing, and constructing of transportation systems including traffic analysis, signal analysis, highway capacity, pavement design, bridge construction, planning of transportation projects, environmental analysis of transportation facilities, and transportation network analysis. |
| Wildlife Biology | Knowledge of the concepts, principles, and theories of wildlife, including classification, taxonomy, population dynamics, distribution, habitat requirements, life histories, reproduction, behaviors, conservation, and care of wildlife. |